although he is not blind to them, but that he is also unable to orientate or localize in space the positions of objects seen in the peripheral parts of the retina, and the relative positions of those that come in succession into central vision.

This case consequently presents an apraxia of the oculo-motor movements similar to that described in the limbs, a defect in visual localization and orientation, and a failure of objects that stimulate the peripheral parts of the retinae to excite attention and the appropriate ocular movements.

Although his lower limbs are apraxic in imitating movements made in front of him, in attempting movements to order, and especially in more complex actions, as in putting on his trousers, he can now walk easily, but proceeds only in short, shuffling steps, as though not confident of himself. His gait is, however, not ataxic. If left alone, he quickly deviates from the direction in which he wishes to go and runs into objects even though he is aware they are present. When, for instance, he is asked to walk between two rows of beds, he frequently turns to the right or to the left and walks up against one; it is noteworthy that he more commonly deviates to the left, though the left halves of his visual fields are certainly unrestricted. Even when urged to keep his eyes to the ground and avoid obstacles, he often does not succeed; he has even run up against a wall or against a large screen which stands in the ward. He can, however, walk straight to a person or an object some distance away if urged to keep his eyes fixed on it, provided there are no obstacles in the way.

When he was brought into a large room in which a few chairs had been placed, and ordered to walk to a point which could be reached without encountering any serious obstacle, he almost invariably walked into a chair and then pulled up suddenly as if surprised at its presence, even though he had seen it and pointed to it before he started. After hesitating for a moment, as though uncertain how to get round it, he usually shuffled towards one side with side-steps, very much as a crab does when it meets a stone, frequently retraced his steps when almost around it, and after he had evaded it often set out in a wrong direction towards his goal. He explains his difficulty by saying, "I don't look where I am going and I can't always go where I want to," but if his movements are carefully observed it is obvious that it is chiefly due to the fact that visual impressions of the obstacles do not readily excite his attention.

An equally striking phenomenon is his inability, or at least his great difficulty, in finding his way about. When he is taken some distance from his bed he is unable to make his way to it again, even though he may see it and point correctly to it. On one occasion, for instance, he was brought about five yards from his bed, to reach which he had only to take a single right-angle turn, but though he indicated it correctly and recognized the patient in the adjoining bed, he turned to walk in a wrong direction when told to go to it. This happened even after the correct route had been pointed out to him. On another occasion, when taken into the next ward, he failed to return through the open door when asked to do so.

Although inattention to visual impressions certainly contributes to it, this inability to find his way about must be attributed chiefly to loss of spatial orientation and to inappreciation of direction and of the spatial relations of objects which he can see and recognize by vision.

SITE OF THE LESION.

The exact extent and position of the anatomical lesion which produced these symptoms is naturally of great interest. It may be assumed with considerable probability that the shrapnel ball had taken a direct course between its entrance and its exit, for in other cases of similar nature we found this to be the case.

Taking the points corresponding with entrance and exit wounds in this case, the brain was entered in the posterior and upper part of the right supramarginal gyrus, and we have reason to believe that the track passed through the dorsal part of this hemisphere, perforated the falx 1½ cm. dorsal to and 1 cm. in the front of the posterior margin of the splenium of the corpus callosum, entered the left hemisphere in this position, passed just dorsal to Wernicke's field in front of the knee of the optic radiations, and made its exit in the inferior part of the left supramarginal gyrus in front of the posterior end of the Sylvian fissure.

Experience has shown that the area of destruction and secondary change produced by such a missile is generally of considerable extent. The track would probably admit a finger.

Finally, it may be remarked that in several of the recorded cases of apraxia, and of disturbance of visual orientation and localization, the lesions corresponded more or less closely in position to that probably present in this patient.

MENTAL CONDITIONS FOLLOWING STRAIN AND NERVE SHOCK.*

BY

R. G. ROWS, M.D.,

TEMPORARY MAJOR, R.A.M.C.

THE following is a brief sketch of the work which is being done in the Red Cross Military Hospital, Maghull, in connexion with the mental and nervous disturbances occurring among those who have experienced the strains and shocks of a shorter or longer period at the seat of war.

The results produced on the nervous system by shocks of varying severity have frequently been described in detail, and it would be superfluous to collect again and classify the phenomena associated with a disturbance of the sensory and motor systems, of the vasomotor system, of the different organs of the body, and of all the functions of the mind.

Judging from the reports recently published in France—and these are fully corroborated by our own experience—it seems improbable that examination of the cases invalided from the war will add very much to our knowledge of the symptomatology of these conditions. On the other hand, such an opportunity to investigate a large number of those suffering from psychic disturbances during the early stages of the illness has never been provided before. In this early period the patient is capable of co-operating effectively with the physician, and it is thereby rendered possible to go beyond the mere symptoms and to discover the psychic cause which has led to the determination of the form assumed by the disease and in many cases to trace the various stages through which the illness may have passed. This will perhaps be more easily appreciated if a series of cases is briefly described.

In the first place, the disturbances referred to above may appear in an intense form as the result of a shock, and, as in civil life, they will gradually disappear after a short period of rest and quiet in a hospital. But unfortunately the number of cases which recover so easily is limited. After several weeks or months in a hospital, and when most of the outward manifestations of shock may have disappeared, the patients will still complain of a changed feeling in themselves; there is produced an alteration in their personality which to them is something mysterious and for which they can find no satisfactory explanation. They confess to a slight loss of control and ask, "What is it that makes me so irritable at a little noise or at being brushed against by another patient as he passes me? I used not to be like that." As a result of this and of their inability to explain it to themselves, they suffer from a condition of anxiety, of apprehensiveness which is very troublesome and may form the starting-point for a more serious illness.

In some cases the physical expression of a special emotion, such as fear or terror, persists for a long time without much change. This condition is usually associated with an emotional state produced by the constant intrusion of the memory of some past incident. An example of this is seen in the case of a man who, after a charge, was placed on outpost duty. It was dark and he was in a state of considerable tension. He heard a noise,

* I have to thank the Medical Research Committee for the interest taken in the work of the hospital and for the assistance rendered in bearing the expense of circulating among the medical officers engaged on military cases of nerve shock a memorandum which has formed the basis of this paper.

which he thought came from some wire in front of him. Suddenly the area around him was illumined by a flare light and he saw a man crawling over the bank. Without challenging, he fired and killed the man. Next morning he found to his horror that he had killed a wounded Englishman who had advanced beyond his comrades and was crawling back. The physical expression of horror, together with an intense sweating and a very marked stammer, persisted for months. At the same time he was tormented with a fearful nightmare, and in his sleep he was heard to say, "It was an accidental shot, sir. Yes, Major, it was not my fault." In the daytime also his attention was concentrated on the memory of the incident, so that "I cannot forget it no matter how I skylark."

An examination back to this trying time which led to his recounting this terrible secret was followed by a marked improvement. The physical signs of the intense emotion gradually disappeared, the vividness of the dreams diminished, and his attention was less concentrated on the one subject. It is interesting to note that the production of a marked emotional state by the death of one of his children led to a recrudescence of all his symptoms—the expression of horror and the stammer—but they disappeared again in a short time.

In some instances the mental disturbance is complicated by the appearance of hallucinations relating to some experience at the front. These hallucinations and the dreams—both frequently occurring in the same patient—hinder the recovery of the patient, but rapid improvement almost invariably follows when an examination is made and the origin of the disorder is explained to him. It is found also that much may be done by educating the patient in a simple way to understand the mechanism of these morbid processes, so as to enable him to appreciate the importance of the emotional elements.

But the prolongation of the illness is not always due to dreams and memories of incidents connected with the war. Of equal, or perhaps of greater, importance in the longer cases are the memories of experiences in their earlier life with which a strong emotional tone was connected. These also may be revived in dreams, and in some instances they are added to the dreams of the incidents which occurred at the front.

In one case of this sort a man was tormented by the memory of an experience which happened to him during the first winter campaign. He and a comrade were carrying a pail of water to the trenches. It was very cold and they set down the pail in order to warm their hands. The comrade placed his hand against the cheek of the patient and said, "That hand is cold." At that moment he was shot dead. This incident was revived not only in dreams at night, but if during the day he were quiet and closed his eyes he could feel the cold hand against his face. He was much distressed by the frequent revival of this incident in such a realistic manner. But he was at the same time troubled by another dream, in which he ran down a narrow lane at the bottom of which there was a well. He dipped his hands into the water, but, on withdrawing them, he was horrified to find they were covered with blood. This dream was connected with a love affair in which his great friend interfered and angered him so much that he attacked him when next they met. He left him on the ground so injured that it was necessary to take him to a hospital. The patient became anxious as to what the result might be and left the district. He went to South Africa and later to America, but never heard whether the man he had attacked had died. The dream troubled him seriously and was difficult to unravel, but this and the one about the cold hand on his cheek disappeared after having been traced back to their origin. The patient made a rapid recovery, and has since been able to bear a severe trial satisfactorily.

The next case* referred to is an interesting example of the way in which, in a patient suffering from a disturbed mental condition following shock, the memory of a past incident led to an enormously exaggerated emotional value becoming attached to a recent occurrence. This patient broke out of hospital after having been refused permission to leave the grounds, and a statement regarding the offence was forwarded to the commanding officer of his regiment. He became very depressed, said he would be disgraced, and that he would commit suicide rather than bring disgrace on his family. Investigation into this emotional outburst showed that his father had deserted the family, had got into prison and "tainted me." As he still remained in a very worried condition a further examination was made, and he confessed to feeling absent-minded and restless. For some time no explanation of this was forthcoming, but at a subsequent interview, after looking outside the door to see that no one was near, he said, "I want to tell you something, sir. Every night I wake to find that I have been restless and have thrown the clothes off the bed; also I find that I have 'lost nature.'" He was perpetually worried over this because he thought "the loss would affect my brain and would drive me mad." He admitted that he had gathered that idea from a book by Dr. X. which he had read years ago. It appeared also that Dr. X. had advertised a special bread and a special medicine which would preserve the nervous system, and that for years the patient had fed himself and his family with the bread and the medicine. But when it was pointed out that the book was written and the bread and the medicine were advertised by a charlatan with the view of making money out of those who were waiting to be duped, the restlessness at night and the "loss of nature" ceased.

The mental condition of this man has become practically normal, and a marked "tic" of the facial muscles and a general tremulousness have disappeared. It should be mentioned that in this case the dreams always began with some terrible experience in the trenches and then turned to some sexual acts with women, usually with his wife, and he awoke to find the clothes disturbed and also that he had "lost nature."

As an example† of hallucinations and delusions being dispelled by tracing them to their source and then giving the patient a clear insight into their nature, we may take a private, aged 31, admitted into this hospital suffering from hallucinations of hearing and delusions of supervision by his family and friends. He heard voices, apparently those of his brother, elder sister, and brother-in-law, telling him what to do and what not to do. The voices sometimes repeated his own thoughts and decisions. He had begun to form a theory about them, and considered that they belonged to a secret police entrusted with the task of supervising his actions and seeing that he did not again transgress as he had done.

An inquiry into his past revealed the following facts. He used to be a bank clerk, and as the result of drinking and smoking too much he had a nervous breakdown five years ago, and on the recommendation of his doctor he was given three months' holiday. While away he went with a prostitute. This was the first and only offence in sexual matters. At first he was not greatly disturbed by the memory of it, but when he went home some months later he thought he could detect a strangeness in the behaviour of his family, as if they knew of his misdeed. He then began to hear voices like those of his brothers and sisters proceeding from the wall, and, becoming rapidly worse and more depressed, he attempted suicide. After spending some months in a private asylum he emigrated to Canada, but was pursued by the voices and had to return to England. At the outbreak of the war he enlisted and went to France; but the voices distracted him so that he could not perform his military duties and he was invalided and sent to this hospital.

This patient during the five months of his residence in the hospital has been treated by the usual method employed here, namely, by seeking the cause of his mental disturbance. This was found in his affair with the prostitute and in his previous drinking. It was explained to him that the basis of his trouble was really the repetition of the memory of these incidents, together with the unpleasant emotional feeling associated with them, which had produced in him a self-reproach. When strongly under the influence of the self-reproach he had attempted suicide, and then the delusion of supervision had become grafted on and systematized. By persistent reasoning and persuasion week by week the process of systematization has been arrested and gradually the hallucinations and delusions have disappeared. The patient now has an insight

* I am indebted to Mr. T. H. Pear for permission to make use of this case.

† I have to thank Captain W. Brown, R.A.M.C., for permission to quote this case.

into the nature and origin of his illness and is to a large extent restored to health.

By means of this series of cases an attempt has been made not only to indicate the forms of mental disturbance observed among the patients admitted to this hospital, but also to show that the term "shock" by no means explains all the conditions of mental illness occurring in those who have returned from the front. Disturbances ranging from a slight, simple shock to a serious condition with hallucinations and delusions have to be observed. The more simple cases, which are popularly spoken of as "shock," recover quickly, but in the majority of instances there remains after the manifestations of shock have disappeared a "residuum," as Wernicke expressed it.

The work which is being done here is directed towards investigating the causes which have led to the persistence of this residuum and towards endeavouring by suitable treatment to assist the patients to recover. In order to understand the conditions we have to deal with it is necessary to consider the various factors which have been active in producing the disturbance. In the first place, it is important to remember that these men have lived through a prolonged period of strain before they have broken down under some special shock, such as the death of comrades at their side, the explosion of a shell near them, or the blowing up of a trench. Incidents such as these, together with the fatigue or exhaustion produced by life in the field, have led to the lowered capacity of resistance or control which is manifest in most of those who come under our care. Owing to their condition of lowered capacity the patients feel that they are not the men they were before the war began; they recognize a change in themselves and describe it clearly. They know that they are irritable, that they are unable to interest themselves or to give a maintained attention to a given subject. Instead of being jovial and social they are solitary and morose; instead of being good-tempered and taking things as they come they are irritable and find great difficulty in controlling themselves. All this is very real to them and leads to a condition of anxiety which is increased by their not being able to understand their condition; they worry because they fear how far this sort of thing may go. As a result they live in a state of expectancy which causes them to exaggerate the trifles of everyday life. Small incidents—slight psychic or physical disturbances which would have passed unheeded before the war—now assume a quite abnormal interest and importance for them.

All the conditions referred to so far can be observed in a merely superficial examination, but a deeper investigation will in many cases demonstrate that various other causes may have participated in producing the illness. These deeper causes—for example, the repeated revival of memories of horrible incidents at the front, terrifying dreams, and also memories of incidents of their past lives—have played a large part in determining and maintaining the disturbed mental condition. Examples of the action of these causes have been given in this paper, and it is perfectly evident that the incidents which have had such a disturbing influence have been those with which an intense emotional state has been associated. Dejerine has suggested that in all cases of hysteria and neurasthenia the cause must be sought in some antecedent emotional condition. The results of the investigations among these patients demonstrate that this principle is capable of a much wider application.

It is the strong emotional factor which so compels the attention of the patient. The normal freedom of their mental activity is interfered with, and in some instances the attention is so fixed on the disturbing influences that the offending memories and their accompanying emotional states cannot be expelled. Then may follow the appearance of hallucinations and the development of delusions which the patient employs to explain his condition to himself, and the repeated dwelling on these delusions leads to a habit of mind which becomes more fixed as time goes on unless some active and suitable treatment is adopted.

While in this state the patient is to a large extent incapable of reasoning about his condition; he is unable to make use of the sum total of his past experiences; he gives way to the emotional states in which he may find himself, or he dwells on the explanation he may have accepted. His difficulty lies chiefly in the fact that he has little or no insight into the nature and mode of origin of his mental illness. This insight can be provided by explaining to him in plain language the mechanism of simple mental processes, by enabling him to understand that every incident is accompanied by its own special emotional state and that this emotional state can be reawakened by the revival of the incident in memory. The patient will thus be led to see that it has been no gross disease and no supernatural agency which has disturbed him; he will be able to recognize the relation of cause and effect in the origin and development of his illness.

When this relation is appreciated both the patient and the physician will begin to realize that they have some ground in common. And this stage being reached, the mystery of the illness will be swept away and the physician will be able to explain to some extent the reason and the mechanism of his loss of control, of his disturbed attention and of his lack of interest, and also to show him how he can educate himself to regain that which was lost The patient will understand that it will not be possible for him to banish the memory completely. But he can be induced to face the trouble, to reason about it, and to recognize it simply as a memory of the past instead of allowing the emotional tone connected with it to dominate him until the condition of anxiety had been produced. The excessive emotional tone will thus be stripped away and the patient will become able to appreciate the real value of the incident, and this will assist him to recover from the condition of confusion, disturbed attention, and anxiety, which, if neglected, may lead to serious results. Further, just as in each case the disturbance can be traced to a specific incident or series of incidents, so the re-education must vary with each in order to overcome the difficulties connected with the specific cause which has been discovered.

The difficulties in the processes of investigation and treatment of these cases are often considerable, and it must be recognized that recovery will not take place in every instance. But the results obtained demonstrate that many mental illnesses recover in a most satisfactory manner under a well-directed and sympathetic treatment. The confidence of the patient must be obtained in order that he may be induced to co-operate in the treatment of his illness. This co-operation is indispensable, and it is extremely interesting to find how readily it can be obtained from patients in whom the illness has lasted only a short time. And when the difficulties, often insurmountable, which are encountered among those in whom the mental disorder has become fixed and systematized are considered, the value of the early treatment of mental disturbances in a hospital by an efficient staff who devote their whole time to the work, at once becomes manifest. The physician should be prepared to give at least an hour for an interview and in most instances several interviews will be necessary. Short cuts may be attempted; they rarely lead to success. A prolonged study of each separate case will not only provide a means of treatment for the individual, but will also collect a mass of evidence which will help to develop a new and enlarged view of psychological medicine.

MENTAL SYMPTOMS COMPLICATING A CASE OF ACUTE TETANUS DURING TREATMENT BY CARBOLIC INJECTIONS.

BY

JOHN EVERIDGE, F.R.C.S.ENG., CAPTAIN R.A.M.C.T.,

TEMPORARY ASSISTANT SURGEON, KING'S COLLEGE HOSPITAL; SURGEON TO THE NEW ZEALAND MILITARY HOSPITAL, ETC.

THANKS to the valuable prophylactic effect obtained by prompt injections of specific antitoxin, cases of tetanus occurring among the wounded in the present war are quite infrequent. Consequently I offer no apology for publishing notes of the following case:

On November 11th, 1915, while unloading an ammunition wagon on the lines of communication, Gunner C. was struck by fragments of a high-explosive shell, which exploded close to him. He was severely and extensively wounded in the right buttock, right thigh, and right foot, as well as in the left leg. The wound of the right foot was very severe, the fragment of